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EXAMINER

BROADHEAD, BRIAN J

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Please find below and/or attached an Office communication concerning this application or proceeding.



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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Paper No. 26

Application Number: 09/399,412
Filing Date: September 20, 1999
Appellant(s): RING, MICHAEL E.

MAILED

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GROUP 3600

Michele K. Yoder
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 11/20/2003.

(1) *Real Party in Interest*

A statement identifying the real party in interest is contained in the brief.

(2) *Related Appeals and Interferences*

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

The statement of the status of the claims contained in the brief is correct.

(4) *Status of Amendments After Final*

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) *Summary of Invention*

The summary of invention contained in the brief is correct.

(6) *Issues*

The appellant's statement of the issues in the brief is correct.

(7) *Grouping of Claims*

The appellant's statement in the brief that certain claims do not stand or fall together is not agreed with because independent claims 1 and 11 are directed to the same subject matter with one claiming a method and the other claiming the apparatus

for carrying out the method. The dependent claims for each of these are similarly alike and stand or fall together.

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

5,605,387	Cook et al.	2-1997
4,671,576	Fourie	6-1987
5,681,015	Kull	10-1997
5,718,487	Roselli et al.	2-1998
5,544,057	Matsuoka	8-1996

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-3, and 5-20 are rejected under 35 U.S.C. 103. This rejection is set forth in prior Office Action, Paper No. 23.

(11) Response to Argument

The rejection of independent claims 1 and 11 rely of the prior art of Cook et al. and Fourie. Appellant's arguments concentrate on claims 1 and 11. In general, Cook et al. discloses a brake energy balancing system for a train that relies on feedback from sensors to help balance braking energy and prevent wheel lock. In Cook et al. the initial conditions used to initiate braking are based on pre-programmed values based on the conditions that would be present when the cars in the train are half-loaded. Fourie teaches of a system that replaces the conventional assumptions used in a train

feedback braking system such as Cook et al. and replaces the assumptions with a speed/adhesion relationship that more accurately describe the braking force that can be applied and improves the braking control. With that in mind appellant's arguments are discussed below.

Appellant's first arguments on the last paragraph of page 8, of the reply brief, state that "none of the prior art is concerned with the wheel to rail adhesion or the dissipation of the braking energy to avoid damaging of the railway vehicle wheels as specifically recited in the claims". First, the examiner cannot find where "avoiding damaging of the railway vehicle wheels" is recited in the claims. Second, wheel to rail adhesion is of primary importance in the Fourie reference as can be seen by item 51, in figure 1. Finally, brake energy balancing is so important in the reference of Cook et al., that it is in the title of the invention.

Appellant's second argument deals with the application of Cook et al. in the prior art rejection. Cook et al. discloses "a brake energy balancing system for multiple brake units using multiple independent brake controllers to control deceleration by maintaining braking torque constant or within a desired torque range" as stated in Cook et al.'s Field of the Invention. Cook et al. also discloses on lines 54-57, on column 3, their "invention can be used in a vehicle 10 such as a MAG-LEV train, or **other types of trains and the like**, having a plurality of trucks...". Appellant argues that since Cook et al.'s main embodiment discloses a MAG-LEV train that Cook et al. should be excluded as prior art and is not applicable in a prior art rejection. This is contrary to the interpretation taken by the examiner and one of general skill in the art would take. The brake system of

Cook et al. is exemplified by a MAG-LEV train, but it is described in a context when the MAG-LEV is braking and is no longer supported or levitated by magnets. It is essentially a train running on wheels on a surface and using friction to slow down the train which is exactly how a "normal" freight train brakes. The one difference between the two systems is that the MAG-LEV does not specifically require rails, as would be the case with a conventional freight train. But in the case of braking one of general skill in the art would find these two cases equivalent, the co-efficient of friction between a wheel and a rail might be a different value than a wheel and some other surface, but this does not materially change how the two systems operate. The only change required to operate would be a different co-efficient of friction to calculate the braking torques for each individual wheel. But this is as simple as using two different co-efficient of frictions between a vehicle on asphalt versus ice. One of general skill in the art would not view the differences in the surfaces as a material difference. Even if the examiner's view above of the difference between the rail of the current invention versus the surface of the Cook et al. reference is not convincing, Cook et al. **still discloses using his invention with conventional trains on rails** on lines 54-57, on column 3. Appellant tries to dismiss this disclosure in paragraph 1 on page 13 of the appeal brief and states "Appellant disagrees as MAG-LEV trains and railway trains have numerous differences and operate in entirely different manners...". This statement by the appellant is flawed because it implies that Cook et al., discloses the "other types of trains" are meant to be other types of MAG-LEV trains. But if you read that section on column 3, line 54, Cook et al. states "MAG_LEV train, or other types of train and the

like". This statement clearly was written with the intent of the other types of trains to **not** be MAG-LEVs. Anyone with general skill in the art would recognize that Cook et al. is referring to the conventional trains that run on rails like the freight train of the appellant's invention. Besides trains that run on wheels on a flat surface such as the MAG-LEV, the only other type of train that is readily apparent is a rail train.

Appellant specifically mentions limitations in claims 1 and 11 that are believed to not be disclosed. In the first paragraph, on page 9 of the brief, the appellant mentions that the claims specifically state that the velocity dependence of the wheel to rail adhesion must be considered when determining the maximum pressure to be applied to the brake cylinders to stop the train consist. Cook et al. disclose determining the maximum pressure to be applied to the brake cylinders to stop the train consist on lines 40-65, on column 4. Fourie teaches using the velocity dependence of the wheel to rail adhesion in finding this pressure on lines 40-56, on column 2.

Appellant also argues in the last paragraph on page 10 of the brief that since the MAG-LEV of Cook et al. does not run along a rail, Cook cannot make reference to the use of velocity dependence of the wheel to rail adhesion when determining the maximum amount of pressure. As discussed above, the examiner believes Cook et al. does disclose running along a rail. Cook et al. does not disclose the use the velocity dependence of wheel to rail adhesion when determining maximum amount of pressure to be supplied to the brake, and the examiner never stated the Cook et al. discloses this. The examiner cited Fourie as a teaching for using the velocity dependence of wheel to rail adhesion when determining maximum amount of pressure to be supplied to

the brake. Cook et al. uses a preprogrammed brake torque reference that is determined based on the assumed half-loaded status of the cars as disclosed on lines 40-52, on column 4. Cook et al. then uses feedback to correct the brake torque signals as is disclosed on lines 53-60, on column 4. Fourie teaches using speed versus rail adhesion curves to improve on the feedback systems like the one described in Cook et al. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the speed versus adhesion curves of Fourie in the invention of Cook et al. because such modification would correct the failure of the convention feedback systems like Cook et al. to consistently provide a true indication of actual braking force, so that even when supplemented with such auxiliary feedback loops, as mentioned above, the retardation rate cannot be controlled accurately, as stated on lines 35-31, on column 1 of Fourie.

Appellant also argues in the first paragraph on page 11 of the brief that Cook et al. is "not concerned with the dissipation of braking energy through the even application of braking pressure to the cylinders so as to minimize the variation in temperatures of the wheels and to prevent damage to the wheels or wheel sets caused by sliding of one or more wheels with respect to the rail." First, it should be mentioned that "preventing damage" is not claimed. Secondly, the assertion that Cook et al. is not concerned with the even application of braking is in error since if the Background of the Invention in Cook et al. this very issue is clearly discussed on line 42, on column 1, through line 6, on column 2. Cook et al. may not explicitly discuss temperature, but one of general skill in the art would know that braking energy is transferred to heat through friction braking,

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and any effort to balance braking energy between wheels would inherently result in the balancing of temperature between the wheels.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

BBB

BJB

February 5, 2004



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